

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A system for treatment of edema, the system comprising:  
a therapeutic pad including:

(i) a bladder defining a flow space for a liquid, the bladder having a proximal portion and a distal portion;

(ii) an inlet port disposed at the distal portion of the bladder;

(iii) an outlet port disposed at the proximal portion of the bladder; and

(iv) a fastener adapted to secure the therapeutic pad about a portion of the anatomy of a user; and

(v) a pump operable to provide the liquid under pressure to the inlet port of the therapeutic pad, and to receive the liquid from the outlet port of the therapeutic pad;

wherein the liquid provided to the inlet port of the therapeutic pad flows toward the outlet port of the therapeutic pad thereby producing a pressure gradient between the distal portion of the bladder and the proximal portion of the bladder.

2. The system of Claim 1, wherein the therapeutic pad is adapted to be secured about a portion of the leg of a user.

3. The system of Claim 2, wherein the therapeutic pad is adapted to substantially cover the knee of the user.

4. The system of Claim 3, wherein the therapeutic pad further comprises a centrally disposed aperture and a pair of oppositely disposed transverse slits, the slits adapted to facilitate flexure of the user's knee.

5. The system of Claim 1, wherein the bladder of the therapeutic pad further comprises a plurality of flow directing blockages.

6. The system of Claim 5, wherein the flow directing blockages comprise a plurality of seal lines, and wherein the seal lines are oriented to direct the liquid flow proximally to generally align with the direction of the user's lymph flow.

7. The system of Claim 6, wherein the bladder further comprises a plurality of spot welds.

8. The system of Claim 1, further comprising a heat exchanger adapted to maintain the temperature of the circulating liquid approximately at a desired temperature.

9. The system of Claim 8, wherein the heat exchanger is disposed in series with the pump and the therapeutic pad.

10. The system of Claim 8, wherein the heat exchanger cools the circulating liquid to a temperature between 32 degrees Fahrenheit and 70 degrees Fahrenheit.

11. The system of Claim 8, wherein the heat exchanger heats the circulating liquid.

12. The system of Claim 8, further comprising a control system for controlling the rate of flow of the liquid to the therapeutic pad.

13. The system of Claim 12, wherein the control system also controls the temperature of the liquid.

14. The system of Claim 12, further comprising a bypass circuit that is controlled by the control system, the bypass circuit operable to selectively bypass the heat exchanger.

15. The system of Claim 14, wherein the bypass circuit includes at least one automated valve that is operably connected to the control system.

16. The system of Claim 1, wherein the pump is adapted to provide a pulsed liquid flow to the inlet port of the therapeutic pad, wherein a higher liquid pressure is periodically supplied to the inlet port.

17. The system of Claim 16, wherein the pulsed liquid flow has a duration that is approximately equal to the transit time for the liquid through the bladder.

18. The system of Claim 1, wherein the therapeutic pad comprises a plurality of bladders, each bladder having an inlet port and an outlet port, and wherein the pump is operable to provide liquid under pressure to each of the inlet ports.

19. The system of Claim 18, further comprising a control system and wherein the control system is adapted to selectively control which of the inlet ports of the plurality of bladders receives liquid from the pump.

20. The system of Claim 19, further comprising a portable power supply, and wherein the control system and portable power supply are disposed in a console.

21. The system of Claim 1, wherein the bladder comprises an pliable inner panel and a pliable outer panel, the inner panel and the outer panel cooperatively defining a volume, and wherein the inner panel and outer panel are joined at a plurality of distributed intermediate locations such that the inner and outer panels are restrained from separating from each other by more than about 1 inch.

22. The system of Claim 21, wherein the inner and outer panels are joined by an RF welding process.

23. The system of Claim 1, wherein the control system operates to generate periodic pulses of relatively high pressure liquid to the inlet port of the therapeutic pad such that the liquid pressure in the therapeutic pad will pulsate between a relatively high pressure and a relatively low pressure.

24. The system of Claim 1, wherein the liquid comprises a mixture of about 80% by volume of deionized distilled water and about 20% by volume of isopropyl alcohol.

25. The system of Claim 1, wherein the therapeutic pad is adapted to substantially cover a shoulder of a user, the bladder including flow deflection means that

are adapted to direct the flow of the liquid proximally and generally along a lymphatic pathway of the user.

26. The system of Claim 25, wherein the bladder comprises a first bladder portion having a first inlet port and a first outlet port, and a second bladder portion having a second inlet port and a second outlet port, wherein the first and second bladder portions are not in direct fluid communication.

27. The system of Claim 1, wherein the therapeutic pad is adapted to substantially cover a thigh of a user, the bladder including flow deflection means that are adapted to direct the flow of the liquid proximally and generally along a lymphatic pathway of the user.

28. A therapeutic pad comprising:

- a flexible inner panel made from a waterproof material;
- a flexible outer panel made from a waterproof material, the inner and outer panels being joined generally at a periphery with a waterproof seal to define a bladder having a distal portion and a proximal portion, the inner and outer panels further being joined at a plurality of intermediate locations;
- an inlet port disposed at the distal portion of the bladder, the inlet port adapted to receive a liquid into the bladder;
- an outlet port disposed at the proximal portion of the bladder, the outlet port adapted to expel the liquid from the bladder; and
- an outer wrap adapted to be wrapped about the bladder, the outer wrap having a securing means adapted to compressively attach the therapeutic pad to a user.

29. The therapeutic pad of Claim 28, wherein the outer wrap comprises an elastic woven fabric.

30. The therapeutic pad of Claim 28, wherein the inner panel is joined to the outer panel with a heat weld.

31. The therapeutic pad of Claim 28, wherein the bladder includes an inlet manifold portion that is in fluid communication with the inlet port, the inlet manifold

portion including diverging flow deflection means, and an outlet manifold portion that is in fluid communication with the outlet port, the outlet manifold portion including converging flow deflection means.

32. The therapeutic pad of Claim 28, wherein the therapeutic pad is adapted to be fastened generally about a knee, the therapeutic pad having a centrally disposed aperture.

33. A compression pad system comprising:

- a liquid;
- a therapeutic pad defining a plurality of bladders, each bladder having a proximal portion and a distal portion, each bladder further having a distal inlet port for receiving the liquid, a proximal outlet port for expelling the liquid, and a plurality of seal lines;
- a fastener adapted to secure the therapeutic pad about a portion of a user;
- a liquid pump operable to propel the liquid to the distal inlet ports, and to receive the liquid expelled from the proximal outlet ports; and
- a thermal modulator operable to modulate the temperature of the liquid prior to the liquid being received at the distal inlet ports;

wherein the liquid provided to the inlet port of the therapeutic pad flows toward the outlet port of the therapeutic pad thereby producing a pressure gradient between the distal portion of the bladder and the proximal portion of the bladder.

34. The system of Claim 33, wherein the therapeutic pad is adapted to substantially cover a knee of the user.

35. The system of Claim 34, wherein the therapeutic pad further comprises a centrally disposed aperture and a pair of oppositely disposed transverse slits, the slits adapted to facilitate flexure of the user's knee.

36. The system of Claim 33, wherein the seal lines are oriented to direct the liquid flow through the bladders generally aligned with the direction of the user's lymph flow.

37. The system of Claim 33, wherein the thermal modulator includes a heat exchanger adapted to maintain the temperature of the circulating liquid between 32 degrees Fahrenheit and 70 degrees Fahrenheit.

38. The system of Claim 37, wherein the heat exchanger is disposed in series with pump and the therapeutic pad.

39. The system of Claim 33, further comprising a control system for controlling the rate of flow of the liquid to the therapeutic pad.

40. The system of Claim 39, further comprising a bypass circuit that is controlled by the control system, the bypass circuit operable to selectively bypass the heat exchanger.

41. The system of Claim 39, wherein the control system operates to generate periodic pulses of relatively high pressure liquid to the inlet port of the therapeutic pad such that the liquid pressure in the therapeutic pad will pulsate between a relatively high pressure and a relatively low pressure.

42. The system of Claim 33, wherein the liquid comprises a mixture of about 80% by volume of deionized distilled water and about 20% by volume of isopropyl alcohol.

43. The system of Claim 33, wherein the therapeutic pad is adapted to substantially cover a shoulder of a user, the bladder including flow deflection means that are adapted to direct the flow of the liquid proximally and generally along a lymphatic pathway of the user.